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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/027,514	12/21/2001	John M. Pigott	SC11926ZC	3716

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MOTOROLA, INC.  
CORPORATE LAW DEPARTMENT - #56-238  
3102 NORTH 56TH STREET  
PHOENIX, AZ 85018

EXAMINER

MCCLLOUD, RENATA D

ART UNIT	PAPER NUMBER
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2837

DATE MAILED: 03/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/027,514

Applicant(s)

PIGOTT ET AL

Examiner

Renata McCloud

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Claim Objections***

1. Claims 1, 9, 14, and 18 objected to because of the following informalities: The claims have a semi-colon after the word "comprising".

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. The term "substantially" in claims 4, 12, and 20 is a relative term which renders the claim indefinite. The term "substantially" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

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The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

5. Claims 1-3, 9-11,13-15,17-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Nakamiya et al (U.S. Patent 6,476,580).

***Nakamiya et al teach:***

**Claims 1 and 18 (Apparatus and Method):** The apparatus and method for detecting a stall condition of a stepping motor (Fig. 3) of the type which includes at least first (Fig. 1:11) and second coils (Fig. 1:44) and a rotor (Fig. 1:43) having a plurality of magnetic poles there around (Col. 5:10-15), the apparatus comprising a current generator (Fig. 7:101) for alternately supplying drive currents to said first and second coils causing the rotor to step (Col. 52:15-19), each of said first and second coils generating signals when transitioning from a driven state to a non-driven state, the signals resulting from motion of said rotor (Fig. 8:SL); an integrator having an input coupled to receive signals and for generating an integrated version thereof (Fig. 7:202); and a comparator coupled to the integrator for comparing the integrated version with a predetermined threshold to detect the stall condition (Fig. 7: COMP2).

**Claim 2:** the signals are of alternating polarity (Fig. 7:101; Col. 52:15-19).

**Claims 3 and 19 (Apparatus and Method):** the apparatus and method further comprising a rectifying circuit having an output coupled to said integrator for correcting the polarity of said signals (Fig. 7:103).

**Claim 9:** An apparatus for detecting a stall condition of a stepping motor (Fig. 3) of the type which includes at least first (Fig. 1:11) and second coils (Fig. 1:44) and a rotor (Fig. 1:43) having a plurality of magnetic poles around it (Col. 5:10-15), the apparatus comprising; current generating means (Fig. 7:101) for alternately driving said first and second coils causing the rotor to perform a stepping rotation (Col. 52:15-19), each of the first and second coils generating a back emf voltage signal when transitioning from a driven to a non-driven state due to the rotation of said rotor (Col. 17:51-60); integrating means coupled to receive the back emf voltage signals to generate an integrated version thereof (Fig. 7:202); and detecting means coupled to said integrating means for determining if said integrated version is representative of the stall condition (Fig. 7:102A).

**Claim 10:** the back emf voltage signals are of alternating polarity (Col. 17: 60-64).

**Claim 11:** rectifying means coupled to the integrating means for correcting the polarity of the back emf voltage signals (Fig. 7:103).

**Claim 13:** the detecting means (Fig. 7:102A) comprises a comparator for comparing said integrated version with a predetermined threshold (Fig. 7:COMP2).

**Claim 14:** An apparatus for displaying a measure of a variable (Fig. 1), comprising; a stepping motor (Fig. 3:10), comprising; at least first (Fig. 1:11) and second coils (Fig. 1:44); and a rotor having a plurality of magnetic poles around it (Col. 5:10-15); a display actuator coupled to the rotor for movement by said rotor to reflect a measure of the variable (Fig 1:D); a current generator for alternately supplying drive currents to said first and second coils causing said rotor to rotate by an amount indicative of the measure of the variable (Fig. 1:A), each of the first and second coils generating signals when transitioning from a driven to a non-driven state (Fig.

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8:SL); the signals resulting from the motion of said rotor (Col. 17:51-60); an integrator having an input coupled to receive said signals for generating an integrated version thereof (Fig. 7:202); and a detector coupled to said integrator for determining if said integrated version is representative of a stall condition (Fig. 7:102A)..

**Claim 15:** the signals are of alternating polarity and further comprising a rectifying circuit coupled to said integrator for rectifying said signals (Fig. 7:103).

**Claim 17:** the detecting means (Fig. 7:102A) comprises a comparator for comparing said integrated version with a predetermined threshold to determine the stall (Fig. 7:COMP2).

### *Claim Rejections - 35 USC § 103*

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 4-8, 12, 16, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakamiya et al as applied to claim 3 above, in view of Ito et al (U.S. Patent 4,491,424).

**Claims 4, 12, 16, (Apparatus) and 20 (Method):** Nakamiya et al teach the limitations of claim 3, 10, 15, and 19. Referring to claims 4, 12, 16, and 19, Nakamiya et al do not teach a blanking circuit. Ito et al teach a blanking circuit for masking an initial portion of each signal (Fig. 22), the initial portion corresponding to the time it takes for the drive current in each of said first and second coils to substantially decay (Fig. 26). It would have been obvious to one having

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ordinary skill in the art at the time the invention was made to modify the electronic apparatus taught by Nakamiya et al to include the teachings of Ito et al. The advantage of this would be an electronic apparatus with pulse width optimization for driving a motor which does not require an externally connected precision resistance.

**Claim 5:** Nakamiya et al and Ito et al teach the limitations of claim 4. Referring to claim 5, Nakamiya et al teach a control circuit coupled to a current generator and to a rectifying circuit (Fig. 2:105).

**Claim 6:** Nakamiya et al and Ito et al teach the limitations of claim 5. Referring to claim 6, Nakamiya et al teach a current generator (Fig. 7:101) with a first switching circuit coupled to and controlled by the control circuit (Fig. 7:Q1, Q2).

**Claim 7:** Nakamiya et al and Ito et al teach the limitations of claim 6. Referring to claim 7, Nakamiya et al teach the rectifying circuit (Fig. 7:103) comprises a second switching circuit coupled to and controlled by the control circuit (Fig. 7: Q3, Q4).

**Claim 8:** Nakamiya et al and Ito et al teach the limitations of claim 7. Referring to claim 8, Ito et al teach the blanking circuit comprises a third switching circuit (Fig. 22:89, 90) coupled to and controlled by the control circuit (Fig. 34).

### ***Conclusion***

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Renata McCloud whose telephone number is (703) 308-1763. The examiner can normally be reached on Mon.-Thurs and every other Fri. from 8 am - 5pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Nappi can be reached on (703) 308-3370. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Renata McCloud  
Examiner  
Art Unit 2837

RDM  
March 24, 2003

  
**Bentzu Ro**  
**Primary Examiner**